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60/261,153 11 January 2001 (11.01.2001) US | (84) Designated States (<i>regional</i>): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SI, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG). |
| (71) Applicant : Z-FORCE COMMUNICATIONS, INC. [US/US]; 24461 Ridge Route Drive., Suite 100., Laguna Hills, CA 92653 (US). | Published :
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| (72) Inventors : MILOUSHEV, Vladimir, I.; 30803 Calle Barbosa, Laguna Niguel, CA 92677 (US). NICKOLOV, Peter, A.; 158 Giotto, Irvine, CA 92614 (US). | (88) Date of publication of the international search report :
9 October 2003 |
| (74) Agents : JAKOPIN, David, A. et al.; Pillsbury Winthrop LLP, 1600 Tysons Boulevard, McLean, VA (US). | <i>For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.</i> |

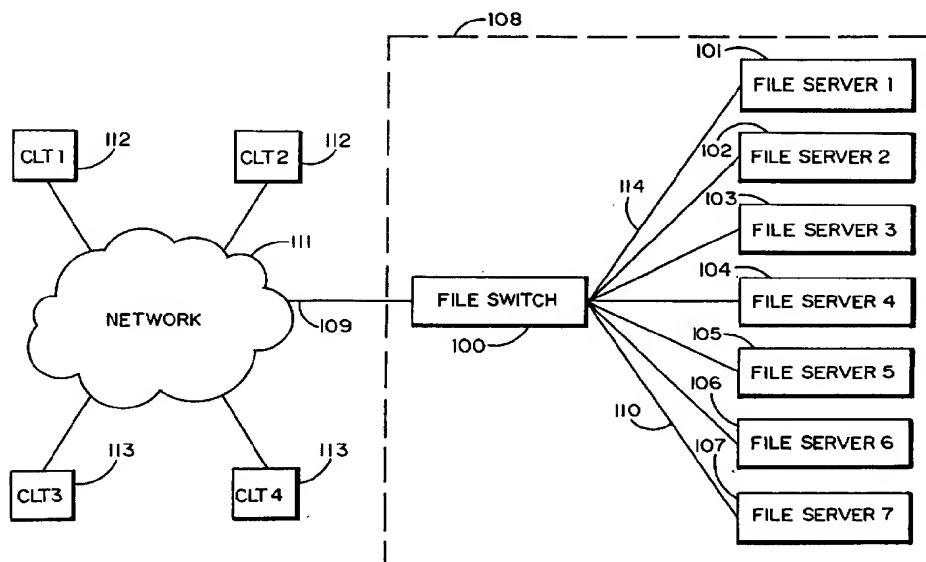
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— *with international search report*

(88) Date of publication of the international search report:
9 October 2003

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: FILE SWITCH AND SWITCHED FILE SYSTEM



(57) Abstract: An apparatus and method are provided in a computer network to decouple the client from the server, by placing a transparent network node, also termed a file switch or file switch computer, between the client and the server. Usage of such a file switch allows reduced latency in file transfers, as well as scalable mirroring, striping, spillover, and other features.

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INTERNATIONAL SEARCH REPORT

Internal Application No
PCT/US 02/00720

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 G06F17/30

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6 012 083 A (WOLFF GREGORY J ET AL) 4 January 2000 (2000-01-04) column 5, line 1-35; figure 1 column 9, line 37-53 column 6, line 6-49; figure 2; table 1 column 7, line 1-22; table 2 column 8, line 36-50; figure 2 column 9, line 7-20 column 10, line 19-44; figure 3 column 12, line 1-5; figure 4 --- -/-	1-4, 8, 9, 16, 18-20, 29-33

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

° Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- * & * document member of the same patent family

Date of the actual completion of the international search

4 March 2003

Date of mailing of the international search report

19. 03.03

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INTERNATIONAL SEARCH REPORT

Intern Application No
PCT/US 02/00720

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6 085 234 A (RIGLER JOEL R ET AL) 4 July 2000 (2000-07-04) column 8, line 53-59; figures 1,5 column 14, line 60 -column 16, line 67; figure 7	1-4,8,9, 16, 18-20, 29-33
Y	the whole document	5-7
X	column 14, line 60 -column 15, line 22; figure 1	25-28
X	column 17, line 2-57	25-28
Y	RODRIGUEZ P ET AL: "Parallel-access for mirror sites in the Internet" INFOCOM 2000. NINETEENTH ANNUAL JOINT CONFERENCE OF THE IEEE COMPUTER AND COMMUNICATIONS SOCIETIES. PROCEEDINGS. IEEE TEL AVIV, ISRAEL 26-30 MARCH 2000, PISCATAWAY, NJ, USA,IEEE, US, 26 March 2000 (2000-03-26), pages 864-873, XP010376176 ISBN: 0-7803-5880-5 page 867, column 2, last paragraph -page 868, column 1, paragraph 1	1-4,8,9, 16, 18-20, 29-33
Y	page 864, column 1, paragraph 3 page 866, column 1, paragraph 1 page 867, column 2, last paragraph page 868, column 1, paragraph 1	5-7
X	CABRERA L-F ET AL: "Swift: Using distributed disk striping to provide high I/O rates" COMPUTING SYSTEMS, USENIX ASSOCIATION, BERKELEY, CA, US, vol. 4, no. 4, August 1991 (1991-08), pages 405-436, XP002209211 ISSN: 0895-6340 page 407, paragraph 3 page 408, line 9-33; figure 1 page 409, line 3-10; figure 1 page 410, line 10-14,22-28 page 411, paragraph 2	5-7
X	page 408, line 18-24	14,15, 17,18
X	page 409, line 3-20; figure 1 page 410, line 10-27 page 430, paragraph 4 page 408, line 18-24 page 409, line 3-10; figure 1 page 410, line 10-27 page 411, paragraph 2 page 430, paragraph 4	21-24

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INTERNATIONAL SEARCH REPORT

Internat plication No
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	BABAK S NOGHAMI ET AL: "A Novel Approach to Reduce Latency on the Internet: Component-Based Download" PROCEEDINGS OF THE INTERNATIONAL CONFERENCE ON INTERNET COMPUTING (WITH PDPTA'00), LAS VEGAS, June 2000 (2000-06), page 1-6 XP002204898 page 2, line 9-24; figure 2 page 5, line 6-30	5-7
Y	page 2, line 9-24 page 3, paragraph 1; figures 3A,3B	10-13
Y	FAN L ET AL: "SUMMARY CACHE: A SCALABLE WIDE-AREA WEB CACHE SHARING PROTOCOL" COMPUTER COMMUNICATIONS REVIEW, ASSOCIATION FOR COMPUTING MACHINERY. NEW YORK, US, vol. 28, no. 4, October 1998 (1998-10), pages 254-265, XP000914440 ISSN: 0146-4833 the whole document	5-7
Y	EP 0 738 970 A (AT & T CORP) 23 October 1996 (1996-10-23) column 10, line 56 -column 11, line 6 column 13, line 13-58; figures 3A,3B	10-13
X	US 6 128 717 A (REGE SATISH L ET AL) 3 October 2000 (2000-10-03) column 7, line 3-5 column 10, line 33-67; figure 2 column 12, line 39 -column 13, line 12 column 13, line 28 -column 14, line 11	25-28

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 02/00720

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☒ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-4,8,9,16,19,20,29-33

transparent file switch to forward a file request from a client simultaneously to several servers based on header data of the request

2. Claims: 5-7

transparent file switch to forward different data portions of a single file request from a client to servers based on header data of the request, each portion being sent to another server

3. Claims: 10-13

methods to aggregate file systems

4. Claims: 14,15,17,18

a plurality of file switches with arbitration of concurrent requests from clients

5. Claims: 21-24

transparent file switch to forward different data portions of a single file request from a client to servers based on a plurality of rules

6. Claims: 25-28

apparatus for aggregating files and collecting use data

INTERNATIONAL SEARCH REPORT

Information on patent family members

Internal Application No
PCT/US 02/00720

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 6012083	A	04-01-2000 JP 10116295 A	06-05-1998
US 6085234	A	04-07-2000 US 5892914 A	06-04-1999
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